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Programme review of the work of the Committee of Experts on Global Geospatial Information Management

Note by the Secretariat

Summary

The present paper contains the report of the Committee of Experts on Global Geospatial Information Management (UN-GGIM), prepared in response to the request by the Economic and Social Council, as referenced in Council resolution 2011/24 in which the Council established the Committee of Experts in July 2011, to present to the Council in 2016 a comprehensive review of all aspects of its work and operations, in order to allow Member States to assess its effectiveness. The report provides a brief account of the establishment of the Committee of Experts, reviews the considerable achievements and progress made from 2011 to 2015, and presents a set of recommendations for consideration by the Council on the future modalities and programme of work of the Committee. The review report was prepared on the basis of the terms of reference agreed by the Council in the aforementioned resolution, recognizing that there was no global Member State-driven mechanism to discuss critical issues on geospatial information management.

Over the past five years, the Committee of Experts has operated effectively and in line with the mandate given by the Council, producing key tangible outputs. The establishment of five geospatial regional coordination committees accounting for all Member States attests to the global recognition of the Committee as the apex intergovernmental mechanism for making joint decisions and setting directions for the production and use of geospatial information within national, regional and global policy frameworks. Consequently, the Committee is well placed to continue to contribute even more to the work of the United Nations, especially in the context of the implementation of the 2030 Agenda for Sustainable Development and the Sendai Framework for Disaster Risk Reduction. The increased engagement of Member States and relevant international organizations in successive sessions of the Committee's deliberations and the momentum for action are evidenced by the increased volume and diversity of issues addressed by the Committee.

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The present review highlights major global accomplishments by the Committee of Experts, and also provides a welcome and unique opportunity to strengthen the geospatial community's mandate, coordination and value proposition at a number of levels; at the global and regional levels through the Council, at the national level through Governments, and across the broader United Nations system through the subsidiary machinery of the Council. The Committee of Experts is seeking endorsement by the Council to continue with its programme of work with Member States, a strengthened mandate, and to be anchored more securely in the United Nations system, with a view to rationalizing and consolidating various intergovernmental geospatial organs within the United Nations system and improving coordination with other related international organizations and processes.

I. Introduction

1. Geospatial information has increasingly been recognized as an important aspect of the national, regional and global information infrastructure. Geospatial information technologies, services and platforms have become critical tools to support national development, economic growth, improved decision-making and policy formulation, and have enhanced the capability for Governments, international organizations and researchers to analyse, model, monitor and report on humanitarian, peace and security, sustainable development, climate change, disasters, and other global development challenges. However, it is also recognized that major barriers and impediments exist — not just technical, but rather institutional and organizational — to building and sustaining geospatial information infrastructures and capabilities to address these national to regional and global challenges. In order to build sustainable and resilient societies, policymakers, the public and the private sector must have access to the right geospatial data and information to provide the evidence to inform good decisions; decisions such as how to build safer, resilient and more prosperous communities, protect infrastructure against climate change, sustainably manage forests and water resources, and protect coastal cities against sea-level rise and future climate impacts.

2. The global importance of geospatial information was recognized by the United Nations in July 2011. At its 47th plenary meeting, on 27 July 2011, the Economic and Social Council, recognizing the urgent need to take concrete action to strengthen international cooperation in the area of global geospatial information management, established the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) in accordance with the terms of reference contained in the annex to resolution 2011/24. In making its decision, the Council stipulated that the Committee be (at least initially) "established and administered within existing resources and organized accordingly" and requested it to submit to the Council in 2016 "a comprehensive review of all aspects of its work and operations, in order to allow Member States to assess its effectiveness".

3. The creation of the Committee of Experts was the culmination of efforts borne out of an extensive three-year consultative process with geospatial information experts from Member States of all regions. Following a series of preparatory meetings between 2009 and 2011, the Council requested the Secretariat to initiate discussions with Member States and relevant stakeholders, and prepare a report for the approval of the Council on global coordination of geospatial information management. The subsequent report (E/2011/89) paved the way for the Council resolution establishing the Committee of Experts on Global Geospatial Information Management in 2011.

4. The Committee of Experts is a formal intergovernmental mechanism of government experts (in almost all cases, from the national geospatial information authorities) from States Members of the United Nations, and experts from relevant international organizations, who participate as observers. The Committee is served by the Committee of Experts Secretariat comprising the Statistics Division of the

Department of Economic and Social Affairs and the Geospatial Information Section (formerly the Cartographic Section)[1] of the Department of Field Support.

5. Over the past five years, the Committee of Experts has established itself as the apex global entity in geospatial information management, bringing together government experts from more than 100 Member States, relevant international organizations, the private sector, and other major global stakeholders from the geospatial information industry and civil society. The importance of this global mechanism, and the impact it has had on global geospatial information management issues, is reflected in the increased levels of participation and engagement by country representatives for the Committee's work items on critical topics, as well as through considerable feedback received from participants at the Committee's annual sessions, the three High Level Forums that have been convened, and a number of international technical capacity development workshops and related forums.

6. The present report describes the considerable achievements of the Committee of Experts, identifies the challenges it faces, and proposes specific recommendations for consideration by the Council for the future modalities and programme of work of the Committee of Experts.

II. Initial work programme of the Committee of Experts

7. The terms of reference (Council resolution 2011/24, annex) of the Committee of Experts described in very broad terms the objectives and functions of the Committee, and provided an important starting point from which the Committee could define its future work programme. Tasked with making joint decisions and setting directions on the production and use of geospatial information within national and global policy frameworks, the Committee promotes common principles, policies, methods, mechanisms and standards for the interoperability of geospatial data and services. It also provides a platform for the development of effective strategies on how to build and strengthen national capacity concerning geospatial information, especially in developing countries. Mechanisms include compiling and disseminating best practices and experiences of national, regional and international bodies on geospatial information related, inter alia, to legal instruments, institutional arrangements, management models and technical standards, including through the participation of experts.

8. At its first session, held in October 2011, and in order to definitively plan and prepare future sessions, the Committee agreed that it should compile an "inventory of issues" derived from the Committee's terms of reference and based on a broad global consultation process, engaging not only representatives from Member States but also the relevant international organizations and the private sector. A working group was established in order to elaborate a detailed inventory of issues and a proposed workplan of actions to be implemented in the next few years for the Committee's consideration.

[1] On 25 June 2015, the General Assembly approved the renaming of the Cartographic Section to the Geospatial Information Section (see Assembly resolution 69/308, effective 1 July 2015, as part of the approved budget for the support account for peacekeeping operations.

9. At its second session, held in August 2012, the Committee considered and agreed on the inventory of issues[2] as a means to inform the scope and possible timing of the workplan of the Committee in coming years. The inventory has since guided the Committee's focus on a number of critical technical topics, including: the future trends in geospatial information management; a global geodetic reference frame; a global map for sustainable development; the adoption and implementation of international geospatial standards; determining global fundamental datasets; geospatial information to support the Sustainable Development Goals and the post-2015 development agenda; development of a knowledge base for geospatial information; identification of trends in national institutional arrangements in geospatial information management; integrating geospatial, statistics and other information; legal and policy frameworks; development of a statement of shared guiding principles; geospatial information and services for disasters; and land administration and management.

III. Major accomplishments of the Committee of Experts

10. In accordance with the request of the Economic and Social Council to "present to it in 2016 a comprehensive review of all aspects of its work and operations, in order to allow Member States to assess its effectiveness", the present section provides an overview of some of the major accomplishments of the Committee, and demonstrates how effective the Committee has been in setting the global geospatial architecture for Member States, and in assisting developing countries in building and strengthening their national capacities in this complex and diverse field.

Annual sessions of the Committee of Experts and High Level Forums

11. In establishing the Committee of Experts, the Council encouraged Member States to hold regular high-level, multi-stakeholder discussions on global geospatial information, including through the convening of global forums, with a view to promoting a comprehensive dialogue with all relevant actors and bodies. The Committee has convened annual sessions since its establishment and has made considerable progress on a comprehensive work programme, and gained strong support and momentum in carrying out activities to meet its stated objectives. The Committee has also convened three High Level Forums on Global Geospatial Information Management, in October 2011 in the Republic of Korea, in February 2013 in Qatar, and in October 2014 in China, designed to promote a comprehensive dialogue with all relevant actors and bodies related to geospatial information management. The Fourth High Level Forum will be convened in Addis Ababa, in April 2016.

UN-GGIM global-regional coordination architecture

12. A primary motivation for the establishment of the Committee of Experts by the Economic and Social Council was an acknowledgement that there was no global Member State-driven mechanism to discuss critical issues on geospatial information management. In order to create a UN-GGIM architecture able to capture "national to regional to global" issues and perspectives, the Committee considered it a priority

[2] Report of the Secretary-General on "The Inventory of Issues to be addressed by the Committee in Future Sessions" (E/C.20/2012/5/Add.1).

to build consensus towards a global regional UN-GGIM architecture, and strongly linked to the mandates of the Committee of Experts. This architecture was completed during the Committee's fifth session, when the regional committee for Africa was formally established. The creation of five regional UN-GGIM committees in Asia and the Pacific, the Americas, the Arab States, Europe and Africa, with each playing a vital role in advocacy efforts, is becoming a strong mechanism to promote, discuss and enhance coordination among Member States within the regions on issues of importance to the Committee and Member States, and to liaise with the Secretariat and regional commissions on major developments in the intervening periods between annual sessions of the Committee of Experts.

The role of geospatial information in sustainable development

13. The report of the Secretary General, which led the Economic and Social Council to establish the Committee of Experts, explicitly mentioned the role of geospatial information in informing sustainable development policies and their monitoring and implementation. With the growing recognition of the importance of an integrated approach to sustainable development, and the need for quality data and information for decision-making and measuring and monitoring the goals and targets on sustainable development, the Committee, at its first session, stressed its commitment to the evolving United Nations sustainable development process, and the post-2015 development agenda in particular. Concerted and ongoing efforts have been made by the Committee of Experts in increasing the visibility and awareness of geospatial information, as an essential integrative tool to monitor and measure sustainable development, to policy- and decision makers and the diplomatic community. The Committee has made an additional effort to leverage existing partnerships and user communities of geospatial information, in such areas as disaster risk reduction, earth observations and information communication technologies. These efforts have been realized in the 2030 Agenda for Sustainable Development (General Assembly resolution 70/1, annex), which specifically demands new data acquisition and integration approaches to improve the availability, quality, timeliness and disaggregation of data to support the implementation of the new development agenda at all levels — including to exploit the contribution to be made by a wide range of data, including earth observation and geospatial information, while ensuring national ownership in supporting and tracking progress.

A global geodetic reference frame for sustainable development

14. A significant accomplishment by the Committee of Experts has been the formulation and endorsement of resolution 69/266, entitled "A Global Geodetic Reference Frame for Sustainable Development", a landmark decision by the General Assembly, adopted on 26 February 2015. Adopted by the Economic and Social Council in November 2014, resolution 2014/31 and subsequently referred to the General Assembly, the resolution calls for greater multilateral cooperation on geodesy, including the open sharing of relevant geospatial data, further capacity-building in developing countries and the creation of international standards and conventions. The resolution outlines the value of ground-based observations and remote satellite sensing when tracking changes in populations, ice caps, oceans and the atmosphere over time. Such geospatial measurements can support sustainable development policymaking, climate change monitoring and natural disaster management, peace and security, and also have a wide range of applications for

transport, agriculture and construction and other areas of national economies. The Committee of Experts is now developing a road map for the global geodetic reference frame to ensure that Member States are able to leverage the importance of geodetic data sharing, methods, sustainable funding and infrastructure to support growing societal needs, including those monitoring progress towards the sustainable development goals.

Future trends in geospatial information management

15. At its first session, the Committee of Experts agreed that there was an urgent need to document major trends that were expected to impact the global geospatial information management community in the coming five to ten years. The result was the convergence of issues and trends as outlined in the strategic report "Future trends in geospatial information management: the five to ten year vision"[3] which brought together contributions from recognized experts from across the world. Endorsed by the Committee at its third session in 2013, the report is now available in eight languages and has been used as a leading resource document by many policy- and decision makers around the world. It provides a detailed analysis of the main themes and trends that will impact the geospatial information management industry in the coming years, and also serves as a technical guide for Member States in the preparation of their national geospatial information strategies and plans. In preparation for the review of all aspects of its work and operations by the Council, the Future Trends report was reviewed and updated by the Committee during 2015, and subsequently adopted by the UN-GGIM Bureau in December 2015.[4]

Statement of shared guiding principles for geospatial information management

16. After four years of substantive development, the Committee of Experts endorsed a Statement of Shared Guiding Principles for Geospatial Information Management[5] at its fifth session, in August 2015. The 15 Principles provide overarching codes of conduct to support the professional practices of the geospatial information management community. Grouped under three broad themes: innovation, governance and compliance, the goal of the Principles is to ensure that accurate, assured and authoritative global geospatial information is able to address global challenges and the sustainable development agenda.

Standards for the global geospatial information community

17. At its fifth session, the Committee of Experts welcomed the report by three of its institutional partners, the Open Geospatial Consortium (OGC), Technical Committee 211 of the International Organization for Standardization (ISO/TC 211) and the International Hydrographic Organization (IHO), and adopted the final published Guide to the Role of Standards in Geospatial Information Management[6] and the "Companion Document on Standards Recommendations by Tier"[7] as the international geospatial standards best practice for spatial data infrastructures. The

[3] See http://ggim.un.org/docs/Future-trends.pdf.
[4] See http://ggim.un.org/UN%20Resource%20Documents.html.
[5] See http://ggim.un.org/docs/meetings/GGIM5/statement%20of%20shared%20guiding%20principles%20flyer.pdf.
[6] See http://ggim.un.org/docs/Standards%20Guide%20for%20UNGGIM%20-%20Final.pdf.
[7] See http://ggim.un.org/docs/Standards%20Companion%20Document%20UN-GGIM%20-%20Final.pdf.

Guide and Companion Document were the result of extensive consultations under the framework of the Committee, and are intended to inform policymakers and programme managers in Member States of the value of using geospatial standards in both the public and private sectors. The Guide and Companion documents are being translated into the official United Nations languages with the support of relevant Member States.

Capacity development in geospatial information management

18. Under the charter of the Committee of Experts efforts have been under way at different levels and regions to support capacity development in geospatial information management, particularly in developing countries, in order to strengthen the ability of national geospatial institutions to establish spatial data infrastructures and engage relevant national level stakeholders. In 2012, the People's Republic of China, through the National Administration of Surveying, Mapping and Geoinformation (NASG), initiated an international cooperation project entitled "Geospatial Information Management Capacity Development in China and other Developing Countries 2013-2017" (China Trust Fund Project) with the UN-GGIM secretariat. The objective being to strengthen the production, management, and dissemination capacity of geospatial information in China and other developing countries, with particular focus on: enhancing the institutional and organizational framework of National Geospatial Information Management Systems; improving dissemination of geospatial data to policymakers and other users; and increasing capacity of the national geospatial information management system to produce better quality and more relevant geospatial data for policymakers and other users.

19. In the Americas, the Government of Mexico, through the Mexican Agency for International Development Cooperation and the National Institute of Statistics and Geography, is taking the lead in providing financial and technical support to 19 countries in the Caribbean region through the Project for the Strengthening of Spatial Data Infrastructures in Member States and Territories of the Association of Caribbean States in collaboration with the Association. The objectives of this project are to: build infrastructure and knowledge to advance the development of national spatial data infrastructures; reduce geospatial data infrastructure gaps within the Caribbean region and in relation to the rest of the Americas; support the integration and participation of Caribbean countries in the international framework of geospatial information management; advance the construction of the global geodetic reference framework; enable access and exchange of information among Caribbean countries and the Americas; and generate and compile information for the design and implementation of national and regional development plans.

20. At the global level, an objective of the Committee of Experts was to provide a platform for the development of effective strategies on how to build and strengthen national capacity concerning geospatial information, especially in developing countries. To help achieve this objective, a Development Account Project entitled: "Strengthening the geospatial information management capacities of developing countries for better policymaking at the national, regional and international levels" was undertaken by the United Nations Statistics Division during the period 2012-2015. The Project objectives included: improving the integration of geospatial data with a variety of other statistical data, including demographic and socioeconomic data; supporting the development of geospatial information strategies and the establishment of geospatial frameworks; strengthening the geospatial information

capacities in support of statistical activities, resulting in better accessibility to countries' statistical and geospatial information; and strengthening the capacities of national geospatial information authorities and other institutions involved in geospatial information activities.

Coordination of United Nations activities related to geospatial information management

21. The Committee of Experts has forged valuable partnerships within the United Nations system and with other intergovernmental organizations such as the International Hydrographic Organization, and international bodies such as the Group on Earth Observations (GEO), the International Federation of Surveyors, the International Society for Photogrammetry and Remote Sensing, the International Cartographic Association, the Technical Committee 211 of the International Organization for Standardization, the Open Geospatial Consortium, and many others. These partnerships have ensured the requirement of the Economic and Social Council for the Committee to engage, as appropriate, with relevant actors beyond the Member States. Within the United Nations system, aspects of geospatial information have been facilitated primarily through two bodies. The first is the intergovernmental mechanism of the United Nations Group of Experts on Geographical Names, which is responsible for encouraging the standardization of geographical names, and consists of cartographers, geographers, names experts, historians, linguists, planners and surveyors from Member States. The second is the internal operational mechanism of the United Nations Geographic Information Working Group (UNGIWG), which comprises an ad hoc technical group of geospatial practitioners of the United Nations system who meet on an annual basis to address common operational geospatial issues — maps, boundaries, data exchange, standards — that support the work of the United Nations organizations and Member States.

Information and knowledge management

22. In establishing the Committee of Experts, the Council emphasized the importance of promoting national, regional and global efforts to foster the exchange of knowledge and expertise in order to assist developing countries in building and strengthening national capacities in geospatial information management. As such, a UN-GGIM website[8] was immediately created in order to provide timely and relevant information on events and meetings, and their associated resources. The website additionally provides information relating to regional entities, expert and working groups, partners, events and major work programmes, including the UN-GGIM knowledge base.[9] The knowledge base facilitates the sharing of experiences and best practices in the management and development of national spatial data infrastructures and arrangements. It has been designed to optimize data and information collection, organization, and retrieval in such areas as: the status of national geospatial information management and systems; global geodetic information management; the status of mapping in the world; the integration of geospatial and statistical information; geospatial information management best practices and case studies in countries; training manuals; and publications on geospatial information; among others. The knowledge base provides easy access to a global repository of information and knowledge to support the management of global geospatial

[8] See http://ggim.un.org.

[9] UN-GGIM Knowledge Base: http://ggim.un.org/knowledgebase/Knowledgebase.aspx.

information by the national geospatial information authorities and the geospatial information community at large.

Integration of geospatial information and statistical information

23. In 2013, the Committee of Experts and the United Nations Statistical Commission recognized the clear need for and value of linking geospatial information and statistical information to improve the relevance of the evidence on which decisions will be made. Towards this end, the Expert Group on the Integration of Statistical and Geospatial Information, composed of national experts from both the statistical and geospatial communities, was created to address "the critical importance of integrating geospatial information with statistics and socioeconomic data and the development of a geospatial statistical framework, especially in the context of the on-going debate on the post-2015 development agenda" (E/2013/46-E/C.20/2013/17).

24. Although predominantly with different national mandates, both the statistical and geospatial professional communities are dealing with new and richer data, including Big Data, and commensurate analytical tools. The integration processes now taking place provide an opportunity to communicate to decision makers the advantages of having multi-sourced and multi-scaled evidence-based data and information for decision- and policymaking. These two communities, under the guidance of the Committee of Experts and the Statistical Commission, are addressing the challenges in coordinating and integrating their data and information effectively to demonstrate how their activities can provide the appropriate tools and data in a timely manner, and demonstrating the applicability in contributing to the implementation of the goals, targets and indicators of the 2030 Agenda for Sustainable Development (see General Assembly resolution 70/1). In this regard, the development of the geospatial statistical framework[10] will be submitted to the Committee of Experts and the Statistical Commission in 2016.

IV. Challenges

25. In the preceding section the considerable achievements and progress of the Committee of Experts was acknowledged. However, much still remains to be done by the Committee to enhance the understanding of the critical role and value of geospatial information in addressing local to regional and global issues and challenges; at the technical and institutional levels, particularly for the developing countries, and at the policy level influencing the decision makers and embedding geospatial information into national policy across the globe. It must be noted that the Committee is still very young and has taken on the task of addressing issues and challenges that have, in some cases, been in existence for many years. Therefore, this section focuses on the challenges that face the Committee of Experts and analyses those areas of its mandate at multiple levels that have yet to be fully realized.

[10] http://unstats.un.org/unsd/statcom/47th-session/documents/2016-31-EG-on-integration-of-statistical-and-geospatial-information-E.pdf.

Global challenges

26. Although fundamental to measuring and monitoring the targets and indicators of the 2030 Agenda for Sustainable Development, the science-policy-data nexus, and related gaps in understanding, still pose challenges for the geospatial community in many Member States, particularly on how best to consolidate efforts in demonstrating how and where geospatial information can contribute to efforts in national agendas. Arguably, the role of geospatial information in contributing to sustainable development has not yet been adequately captured or described by the sustainable development policy practice, national geospatial information policy arrangements, or by the professional geospatial community. This means there is still a considerable requirement for continued outreach and awareness globally, as the need and demand for geospatial information capabilities is considerable and continues to increase.

27. The outcome document of the United Nations Conference on Sustainable Development held in Rio de Janeiro, Brazil, in 2012 entitled "The future we want" (see General Assembly resolution 66/288, annex) contained clear and practical measures for implementing sustainable development, including setting the path to develop a set of Sustainable Development Goals and to converge with the post-2015 development agenda. The outcome document captured two critical references to geospatial information: in the area of disaster risk reduction: "We further recognize the importance of comprehensive hazard and risk assessments, and knowledge- and information-sharing, including reliable geospatial information"; and in the area of means of implementation — technology: "We recognize the importance of space-technology-based data, in situ monitoring and reliable geospatial information for sustainable development policymaking, programming and project operations".

28. The synthesis report of the Secretary-General on the post-2015 sustainable development agenda[11] (A/69/700) calls for "an evidenced-based course for realizing sustainable development" that is "grounded in the data revolution". The report of the Secretary-General's Independent Expert Advisory Group on a Data Revolution for Sustainable Development, entitled "A World That Counts"[12] suggests that, in order to mobilize the data revolution for sustainable development, a comprehensive strategy and road map towards a new "Global Consensus on Data" must be developed by the United Nations, inclusive of the need to "accelerate the development and adoption of legal, technical, geospatial and statistical standards".

29. Released in July 2015 by the Secretary-General, the final Millennium Development Goals report[13] reflects in some detail, under the topic "Measure what we treasure: sustainable data for sustainable development", the need for better data to support the implementation of the new development agenda at all levels. Many of these reflections are highly relevant to the efforts of the Committee of Experts pertaining to geospatial information. They include the following: real data improvement occurs when demand and policy support meet; despite improvement, critical data for development policymaking are still lacking; real-time data are needed to deliver better decisions faster; geospatial data can support monitoring in many aspects of development, from health care to natural resource management; new technology is changing the way data are collected, analysed and disseminated; global

[11] http://www.un.org/ga/search/view_doc.asp?symbol=A/69/700&Lang=E.
[12] A World That Counts: http://www.undatarevolution.org/report/.
[13] The Millennium Development Report 2015, http://www.un.org/millenniumgoals/.

standards and an integrated statistics system are key elements for effective monitoring; and data should be open, easily accessible and effective for development decision-making. With regard to geospatial data supporting monitoring, the report specifically acknowledged the importance of geospatial information "Knowing where people and things are and their relationship to each other is essential for informed decision-making. Comprehensive location-based information is helping Governments to develop strategic priorities, make decisions, and measure and monitor outcomes. Once the geospatial data are created, they can be used many times to support a multiplicity of applications."

30. The 2030 Agenda for Sustainable Development[14] specifically demands the need for new data acquisition and integration approaches to improve the availability, quality, timeliness and disaggregation of data to support the implementation of the new development agenda at all levels — including to "exploit the contribution to be made by a wide range of data, including earth observations and geospatial information, while ensuring national ownership in supporting and tracking progress". This need has a goal, target and date associated with it, as described in Goal 17 in the area of data, monitoring and accountability: "By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts." In this context, the Committee of Experts has considerable knowledge and opportunity to engage in the new Agenda, as comprehensive and authoritative data and information will be needed in a timely manner to support sustainable development policy and decision-making at all levels in the years ahead.

31. Given that many of the goals of the 2030 Agenda for Sustainable Development have a geospatial dimension, at its fifth session, through decision 5/101, the Committee of Experts committed to working closely with the statistical community, at the national and global levels, by providing inputs into the processes to develop the global indicator framework under the auspices of the Inter-agency and Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs), since many goals have a cartographic and geospatial dimension. As a means to do so, the Committee established a task team of Member State geospatial experts to assist in developing the inputs, building on existing work and ongoing working mechanisms.

32. While much of the technology, data and information exist to support the many areas of key global challenges such as peace and security, climate change, sustainable development, humanitarian and emergency response, gaps remain and vary among the different stakeholders and actors. This provides an opportunity for the Committee of Experts to inform policymakers at the national to regional and global levels on the aforementioned topics, as well as mechanisms such as global fundamental geospatial data themes, the global geodetic reference frame, data interoperability and standards, legal and policy issues, the advancements and trends in geospatial information and technology, and means of data and information management in particular application areas. While awareness-raising at the highest levels of decision and policymaking needs to continue, capacity development and

[14] Transforming our World: The 2030 Agenda for Sustainable Development: https://sustainabledevelopment.un.org/content/documents/7891Transforming%20Our%20World.pdf.

education and awareness on how to better use geospatial information science and technology to meet emerging requirements, also need to increase.

Regional challenges

33. While the Committee of Experts has noted the cross-cutting issues that need to be addressed at the global level, there is recognition that there is regional specificity that needs to be accommodated when addressing geospatial information management issues. Each region differs in its challenges owing to their regional geographic and geospatial characteristics, modalities, areas of priority, stages of development, and implementation of geospatial information management for their national to regional development. One enormous advantage in the application of geospatial information management and technology is that it can quickly provide paradigm shifts and great leaps in development. However, in order to do so the underlying institutional governance mechanisms need to be in place for an effective national geospatial information management strategy. The Committee of Experts has observed that although some regions may have pockets of geospatial information management implementation, there may also be subregional differences, as seen in the cases of the Caribbean countries in the region of the Americas, or the small island Pacific states in the region of Asia and the Pacific. In such cases, interregional coordination and cooperation among the small island States may provide better dialogue opportunities owing to their commonalities of issues and challenges. However, one area which is a cross-cutting challenge in all of the regions concerned is capacity-building, particularly in relation to the technology divide. As the area of geospatial technology is dependent on the advances of information communication technologies in general, the speed and scope of adoption and implementation demands the global geospatial community to be continuously agile.

National challenges

34. A common challenge that national geospatial information authorities face within their countries is the (lack of) policy awareness of the paradigm shift of geospatial information management from just a visualization and mapping tool to a fundamental evidence-based decision-making solution owing to its ability to integrate and analyse multi-scale, multisectoral geospatial, statistical and other data and information to provide a common operating picture. The shift from a map to an integrated decision-making tool provides challenges unless there are legal, policy and institutional frameworks in place which allow effective and efficient interoperability of data and information across the different national institutions which leverage geospatial information. While the situation and level of maturity is often nationally specific, the overriding lack of awareness needs to be addressed at the highest level for both strategic and operational contexts in national development. It will also take transformative change and collaborative approaches to link different data — demographic, statistical, earth observations, environmental and other societal geospatial data together with the one thing they have in common — geographic location. As witnessed by the exponential growth in location-based services in industry and the private sector, the location element of data, including statistical data, will be critical in the future. Although the recognized maturity of these frameworks is a cornerstone for any successful national geospatial information strategy, sustainable implementation needs to cater for institutional, financial, methodological and

technical supporting mechanisms to ensure appropriate delivery of services by the respective national geospatial information authorities, which in many cases are the national mapping (and cadastral) authorities.

United Nations system challenges

35. Although there is continued expectation for United Nations activities on geospatial information management to increase, many of the collaborative geospatial activities occurring within the United Nations have for many years been carried out on a "best efforts" basis. Generally, a concerted effort to increase the awareness and value of geospatial information, and where it is being applied within the Member States and United Nations system, will need to continue in the coming period, especially in messaging the usefulness of geospatial information management for evidence-based decision- and policymaking, and in ensuring that there is no duplication of effort. In this regard, the Committee of Experts retains a standing agenda item on the coordination of United Nations activities related to geospatial information management, inclusive of contributions from UNGIWG.

36. At its fifth session, in August 2015, through decision 5/110, the Committee of Experts noted the many valuable geospatial information initiatives undertaken throughout the United Nations system, while expressing some concern that they should be sustainable and not appear to be fragmented, called for a report documenting the existing geospatial resources, activities and governance arrangements of the United Nations system in a systematic manner, and invited the Secretariat to work closely with UNGIWG to reach out to relevant United Nations partners to assist in the preparation of the report. The Committee further suggested that other existing United Nations coordination frameworks be studied in preparing the report, stressing the need for support from senior management to ensure effective cooperation, including the elaboration of a proposal for a more structured coordination mechanism, and agreed to include the issue of the effective coordination of geospatial activities of the United Nations system in the review prepared by the Committee of Experts on its work for presentation to the Council in 2016.

Secretariat challenges

37. As the Committee continues to become more established and expand its role and mandate as the peak United Nations global geospatial organ in contributing to the global agenda, the expectation of increased support by the United Nations Secretariat also continues to grow. The establishment of the Committee of Experts by the Economic and Social Council, with the Department of Economic and Social Affairs and the Department of Field Support to function jointly as the substantive UN-GGIM secretariat within existing resources, served well initially. However, the growing work programme of the Committee has resulted in a commensurate workload for the limited Secretariat resources, which are faced with challenges in meeting the Secretariat role and function to serve the increasing meeting and coordination activities of the Committee and Member States.

38. Although considerable and generous support has been provided by the United Nations Conference Management Services at Headquarters in New York, the Committee of Experts, and thereby the UN-GGIM secretariat, does not at present have formal and fully resourced United Nations Conference Management Services for the annual three-day sessions of the Committee of Experts. In accordance with

the relevant oral statement of programme budget implications issued when the Committee was established by the Economic and Social Council in 2011, conference services are at present provided only during the "low activity" periods (January or August) and on an "as available" basis.

39. At its fifth session, in August 2015, through decision 5/113, the Committee of Experts stressed that sustainable funding for the operations of the Committee was needed to ensure its continued effectiveness, including conference support, substantive and technical Secretariat support, and in particular the funding of the participation of national delegates from developing countries, in order to ensure a broad and balanced representation at the sessions of the Committee, and in this context gratefully acknowledged the efforts of the Secretariat to secure short-term funding from a variety of sources over the past years and expressed its appreciation to the various donors, noted that such short-term funding is not sustainable and also noted that some of the funding would need to be secured through the consolidation of activities and the rationalization of the various geospatial bodies within the United Nations system.

V. Consolidation of subsidiary geospatial bodies of the Economic and Social Council

40. The comprehensive review of the Committee's work, commensurate with the successful establishment of the regional UN-GGIM committee architecture, has provided a timely opportunity for the Committee to consider and review in detail two existing subsidiary geospatial bodies of the Economic and Social Council; the United Nations Regional Cartographic Conference for Asia and the Pacific (UNRCC-AP),[15] and the United Nations Regional Cartographic Conference for the Americas (UNRCC-Americas).[16] The UNRCC-AP, operating on a three-year rhythm for five days, was established by the Economic and Social Council in July 1954 (resolution 556 (XVIII)) in order for the Governments of Member States to stimulate surveying and mapping of their national territories. The convening of a regional cartographic conference was seen as an effective means to attain these objectives. The first UNRCC-AP was convened in 1955. Similarly, the UNRCC-Americas, taking note of the success of the regional cartographic conferences held in Asia and the Pacific, was established by Council at its 56th session in 1974 (resolution 1839 (LVI)). The first UNRCC-Americas conference was convened in 1976 and operates on a four-year meeting rhythm, also meeting for five days.

41. In order to take the necessary actions on resolutions determined by the United Nations Regional Cartographic Conferences, the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP) and the Permanent Committee for the Infrastructure of Geospatial Data of the Americas (PC-IDEA), had been established and operated under the purview of the Regional Cartographic Conferences. Following the establishment of the Committee of Experts in 2011, and noting that the Committee meets annually, PCGIAP and PC-IDEA have since been

[15] United Nations Regional Cartographic Conference for Asia and the Pacific: http://unstats.un.org/unsd/geoinfo/RCC/unrccap.html.

[16] United Nations Regional Cartographic Conference for the Americas: http://unstats.un.org/unsd/geoinfo/RCC/unrcca.html.

renamed UN-GGIM-AP and UN-GGIM: Americas, in 2012 and 2013, respectively, and now report on an annual basis to the Committee of Experts.

42. Consensus among government representatives from Member States is that the Regional Cartographic Conferences, although critical to regional cartographic and geospatial development for many years, have served their purpose and have now become redundant, particularly as they have been catering for only two geographic regions. The establishment of the Committee of Experts and the regional UN-GGIM architecture globally has subsumed the functional role of the Regional Cartographic Conferences. With UN-GGIM regional committee meetings occurring in all five United Nations regions at least annually, and all five formally reporting to the Committee of Experts, the United Nations Regional Cartographic Conferences are no longer required and could be removed from the United Nations calendar of conferences and meetings, with their mandates and obligations assumed by the Committee of Experts.

43. At the 20th UNRCC-AP, convened in the Republic of Korea, from 6 to 9 October 2015, representatives adopted a resolution supporting the mandate of UN-GGIM to enhance its role and increase its contribution to the work of the United Nations, agreed that the formal United Nations Regional Cartographic Conference format was no longer a necessary requirement, and recommended that the Economic and Social Council remove the UNRCC-AP from the United Nations calendar of conferences and meetings, with its mandates and obligations assumed by UN-GGIM at the global level, and its technical and substantive activities at the regional and national levels assumed by UN-GGIM-AP. A similar conclusion was reached for the United Nations Regional Cartographic Conference for the Americas by UN-GGIM: Americas at its second plenary meeting convened in Mexico City, from 11 to 12 November 2015.

44. In terms of budget implications for United Nations Conference Management Services under the Economic and Social Council, and taking into account the rhythm and number of convening days for each of the United Nations Regional Cartographic Conferences, their cessation will provide the sufficient "offsets" to ensure that establishing and maintaining the Committee of Experts within the regular United Nations calendar of conferences and meetings under the Economic and Social Council will remain resource and budget neutral.

45. The United Nations Group of Experts on Geographical Names (UNGEGN), also a subsidiary geospatial body of the Economic and Social Council, was established by the Council in 1959 (Council resolution 715 A (XXVII)) following recommendations from the first UNRCC-AP, held in 1955. UNGEGN has responsibility for encouraging the standardization of geographical names, and promoting the national and international benefits to be derived from standardization. The Group of Experts convenes two five-day sessions during a five-year period, while the United Nations Conference on the Standardization of Geographical Names is convened every five years for 10 days, inclusive of two days for the technical session of UNGEGN. Noting the different but complimentary roles and mandates of each United Nations mechanism reporting to the Council, productive discussions between the UN-GGIM Bureau and UNGEGN Bureau are at present evaluating how the UNGEGN meeting rhythm can be better streamlined and incorporated into the global architecture in the interests of better collaboration and cooperation for Member States.

VI. Conclusions and recommendations

46. At its fifth session, held in New York in August 2015, the Committee of Experts considered a detailed draft of the comprehensive review of the work of the Committee during the period 2011-2015, and noted the considerable achievements and progress made as well as the challenges that remain. With very limited resources but, importantly, with strong engagement and commitment by national Governments and the international geospatial community, the Committee of Experts has established and organized itself quickly and delivered concrete results towards achieving its mandate. The Committee has gained universal recognition as the global mechanism for deliberating on the major issues in geospatial information management. Member State participation in each successive Committee meeting since 2011 has increased, and the momentum generated from the establishment of the five UN-GGIM regional committees provides a positive reflection of the importance given by Member States to unifying the global geospatial community.

47. In adopting decision 5/113[17] at its fifth session, the Committee of Experts agreed that a call for strengthening the mandate of the Committee was appropriate and needed, in order for it to be at the same level as other subsidiary bodies of the Council, in particular the Statistical Commission, in order to strengthen its interaction with them, and also agreed that the role of the Committee, as an assembly of authoritative national government institutions in the field of geospatial information, was increasingly important in effectively coordinating the field of geospatial information management in the broader United Nations system.

48. The Committee stressed that sustainable funding for its operations was needed to ensure its continued effectiveness, including conference support, substantive and technical Secretariat support, and in particular the funding of the participation of national representatives from developing countries, in order to ensure a broad and balanced representation at the sessions of the Committee. In this context, the Committee gratefully acknowledged the efforts of the Secretariat to secure short-term funding from a variety of sources over the past years and expressed its appreciation to the various donors, but noted that such short-term funding is not sustainable and that some of the funding may need to be secured through the consolidation of activities and the rationalization of the various geospatial bodies within the United Nations system.

49. In adopting decision 5/113 at its fifth session, the Committee of Experts also approved the process for finalizing this review, inclusive of convening a global consultation process with Member States and relevant international organizations in October/November 2015. Based on a revised draft of the report capturing the discussion held in the Committee session, this process was facilitated by the Secretariat with guidance from the UN-GGIM Bureau. With more than 100 comments from approximately 60 responses, government representatives from Member States have clearly specified that they are not ready to reduce the significant momentum initiated by the Committee of Experts at this critical stage in the global development cycle. Rather, they seek to further expand the mandates of the Committee to enable it to function as the global governing body on all issues related to geospatial information in order to effectively and efficiently support the

[17] http://ggim.un.org/docs/meetings/GGIM5/E-2015-46-E-C.20-2015-17_GGIM5%20Report_en.pdf.

emerging geospatial demands for Member States, including the 2030 Agenda for Sustainable Development.

50. These views have been strongly endorsed with decisions by each of the four formal regional committee meetings convened in October and November 2015, including the UNRCC-AP. By way of example, at the first plenary meeting of UN-GGIM: Africa, convened in Nairobi, from 23 to 25 November 2015, national representatives reaffirmed a strengthened mandate for the Committee of Experts in order to enhance its role and increase its contribution to the work of the United Nations system, and to be at the same level as other subsidiary bodies of the Economic and Social Council in order to strengthen its interaction with them, in particular the Statistical Commission, and to enable it to function as the peak intergovernmental organ reporting to the Council on all matters relating to geography, geospatial information and related topics, and as the governing Member State and United Nations system body on geospatial information management.

51. With many logistical and substantive arrangements now firmly in place, and with location information more important than ever for providing the content and context for understanding natural and human systems, the Committee is well placed to continue to contribute even more to the work of the United Nations, especially in the context of the implementation of the 2030 Agenda for Sustainable Development and the Sendai Framework for Disaster Risk Reduction. Further, this review report provides a welcome and unique opportunity to strengthen the geospatial community's mandate, coordination and value proposition; at the global level through the Council, at the national level through Governments, and across the broader United Nations system through the subsidiary machinery of the Council in the area of geospatial information.